An Amendment to the Water Quality Control Plan for the Colorado River Basin Region to Establish Palo Verde Bacterial Indicators Total Maximum Daily Load

AMENDMENT

(Proposed changes are in reference to the Basin Plan as amended through 2002. Proposed additions are denoted by underlined text, proposed deletions are denoted by ~~strikethrough~~ text)

Section V. TOTAL MAXIMUM DAILY LOADS add the following new subsequent Sections and renumber accordingly:

E. Palo Verde Bacterial Indicators Total Maximum Daily Load

1. TMDL ELEMENTS

Table E-1: Palo Verde Bacterial Indicators TMDL Elements

ELEMENT	
Problem Statement (Impaired water quality standard)	Excess delivery of bacteria to Palo Verde Outfall Drain (PVOD) in the Palo Verde Valley which lies in both Riverside and Imperial Counties of California, has resulted in degraded conditions that impairs designated beneficial uses: Water Contact Recreation (REC I), Water Non-Contact Recreation (REC II), Warm Freshwater Habitat (WARM), Wildlife Habitat (WILD), Preservation of Rare, Threatened, or Endangered Species (RARE). Bacteria pose a public health threat to people contacting water in PVOD and are in violation of water quality objectives.

ELEMENT	CURRENT CONDITIONS		
Numeric Target	The following are the in-stream numeric water quality targets for this TMDL:		
	Indicator Parameters	**30-day Geometric Mean[a]**	**Maximum**
	Fecal Coliforms	200 MPN[b]/100 ml	c
	E. Coli	126 MPN/100 ml	400 MPN/100 ml
	Enterococci	33 MPN/100 ml	100 MPN/100 ml
	a. Based on a minimum of no less than 5 samples equally spaced over a 30-day period. b. Most probable number. c. No more than 10% of total samples during any 30-day period shall exceed 400 MPN/100 ml.		

ELEMENT	CURRENT CONDITIONS
Source Analysis	The main sources of pathogens as indicated by fecal coliforms and E. coli bacteria in Palo Verde Agricultural Drain are natural background sources and dysfunctional septic systems. Natural sources of pathogens appear to play a significant role, but their actual contribution, and contributions from other nonpoint sources of pollution in general require proper characterization.

ELEMENT	CURRENT CONDITIONS
Margin of Safety	Discharges from point sources and nonpoint sources of pollution shall not exceed the following waste load allocations (WLAs) and load allocations (LAs), respectively: **WLAs and LAs** **Indicator Parameters** — **30-Day Geometric Mean[a]** — **Maximum** Fecal Coliforms — 200 MPN[b]/100ml — [c] E. coli — 126 MPN/100 ml — 400 MPN/100 ml Enterococci — 33 MPN/100 ml — 100 MPN/100 ml a. Based on a minimum of no less than 5 samples equally spaced over a 30-day period. b. Most probable number. c. No more than 10% of total samples during any 30-day period shall exceed 400 MPN/100 ml. The allocations are applicable throughout the entire stretch of PVOD. The numeric target concentrations are based on extensive epidemiological studies conducted by USEPA and others. By setting the TMDL and each of the load and waste load allocations equal to the water quality objective, uncertainty is limited about whether attainment of the TMDL and the individual allocations will result in attainment of the applicable numeric target. The TMDL analysis takes a conservative approach of providing load and wasteload allocations even for relatively minor loading sources, which provide additional assurance that the selected source control approach will result in attainment of the numeric objectives. To address uncertainty concerning the bacterial die-off and regrowth dynamics in PVOD, the TMDL provides an implicit margin of safety by including a relatively aggressive monitoring and review plan which ensures that additional data are collected and that, if necessary, the TMDL will be revised.

Seasonal Variations and Critical Conditions	Loading to PVOD is the result of contributions from septic systems and wildlife, both relatively constant in nature. Critical loading conditions are likely to occur during low flow periods. Low flows in the Palo Verde Irrigation District coincide with winter months, January and February in particular, when less water is diverted into the system for irrigation.
Load Allocations and Wasteload Allocations	The allocations are applicable throughout the entire stretch of Palo Verde Outfall Drain.
	Load Allocations: Based on the source assessment for PVOD, bacterial concentrations originate solely from nonpoint sources. As this TMDL is density-based, the effluent from any future point sources and dischargers are required to meet the bacteriological water quality objectives. The existing WWTPs in Palo Verde Valley discharge to percolation basins, not PVOD and therefore do not have NPDES permits. It is assumed that any future WWTPs in the valley will discharge effluent in the same manner and therefore not be considered a point source discharge.
	Natural Sources: Wildlife is considered a natural background source. Given the abundance of wildlife concentrations in and above Palo Verde drains, it is expected that fecal contributions from wildlife comprise a significant proportion of bacteria loading in the entire system.
	Waste Load Allocations: There are no point source discharges to Palo Verde Outfall Drain or Lagoon, and therefore no WLAs. Any future discharge from point sources (NPDES permits) shall not exceed the total limits specified under 40 CFR 122 et seq., and the corresponding mass loading rates. In accordance with NPDES permits, dischargers will continue to be required to take necessary action to ensure consistent compliance with their NPDES permits.

TMDL attainment shall be in accordance with the schedule contained in the Numeric Target Section of Table E-1.

2. IMPLEMENTATION ACTIONS AND REGULATIONS FOR ATTAINMENT OF PALO VERDE BACTERIAL INDICATORS TMDL

The bacteria load allocations, any future waste load allocations, and water quality objectives shall be applicable to Palo Verde Outfall Drain for the protection of the REC I and REC II beneficial uses and shall be achieved within 10 years of USEPA approval of the TMDL. To this end, the following actions shall be implemented:

A. Designated Management Actions

Following USEPA approval, the proposed implementation plan will be in two phases. Phase I consists of actions to be accomplished between 2004 and 2007. Phase I relies on controlling nonpoint sources of bacteria to Palo Verde Outfall Drain via voluntary management practices and regulatory compliance. Phase I also depends on any future point source contributors to comply with the requirements of their NPDES permits, Waste Discharge Requirements (WDRs), or waivers.

If water quality targets are not achieved upon conclusion of Phase I in 2007, Phase II actions will begin and the time schedule for implementation will be revised. The phased approach allows for immediate control of major sources while allowing time for monitoring to provide an analytical basis for Phase II planning. Phase II requires further assessment of bacterial contributions from sources not addressed in Phase I and determines the development of implementation actions to control these sources. Phase II will be completed by 2014. In Phase II, plans for a wastewater treatment plant in the community of Palo Verde may be introduced as the best method for managing bacteria in Palo Verde Outfall Drain.

Additionally, a revision of Water Quality Objectives for Palo Verde Outfall Drain and Lagoon, such as a Site Specific Objective (SSO), will be considered for addressing natural background sources of bacteria by December 31, 2008.

1. Phase I Implementation Actions

Implementation Actions in this TMDL include both voluntary actions and those already required under existing or anticipated regulatory requirements. Voluntary actions will be taken by a variety of implementing parties, while the required actions are to be taken by identified responsible parties.

a. Septic System Maintenance and Education
Inform property owners that maintaining their septic systems is their personal responsibility and imperative to public health. Public outreach and education on this subject is the responsibility of Riverside and Imperial County Health Departments.

b. Septic System Maintenance Plan
The Regional and State Water Boards, with the cooperation of Riverside and Imperial Counties, will create a plan for the location identification and maintenance of septic systems based on CWC 13291. The Regional Board's existing waiver of waste discharge requirements will end on June 30, 2004. At that time, the Regional Board may adopt a new waiver policy consistent with State Board septic system regulations adopted in accordance with CWC 13291. Alternatively, the Regional Board may consider entering Memoranda of Understanding (MOUs) with the

counties for enforcement of septic system requirements, or begin taking enforcement action against individuals who are discharging illegally.

c. DNA Source Tracking Study
Staff will analyze results of on-going DNA source tracking study which will be completed in 2004.

d. Quality Assurance Project Plan and Monitoring Plan
Staff will develop a monitoring plan & Quality Assurance Project Plan (QAPP) within 180 days of USEPA approval.

e. Implementation Tracking Plan
Staff will track activities implemented by dischargers and responsible parties and surveillance conducted for Palo Verde Bacterial Indicators TMDL pursuant to an implementation tracking plan (ITP). The ITP will be developed within 180 days following USEPA approval of the TMDL. The Regional Board's Executive Officer shall approve the ITP after determining that the ITP satisfies the objectives and requirements of this Section. The objectives of Regional Board surveillance and implementation tracking are:

- Assess/track/account for practices already in place;
- Measure the attainment of milestones;
- Determine compliance with NPDES permits, WLAs, and LAs; and

Report progress toward implementation of NPS water quality control, in accordance with the SWRCB NPS Program Plan (PROSIP).

Table E-2 Phase I Actions

PRACTICE	ACTION	SCHEDULE	IMPLEMENTING PARTIES
Septic system inspection and maintenance education	Inspection and approval of septic systems. Educate public on proper maintenance of septic systems	2004-Ongoing	County Health Departments
Septic system maintenance/ upgrade	Inspect and maintain all septic systems in watershed per AB 885	2004-Ongoing	Riverside County, Imperial County
Source tracking	Staff will analyze DNA Source tracking study	2004	Regional Water Quality Control Board
QAPP	Staff will develop a QAPP and Monitoring Plan	180 days after USEPA approval	Regional Water Quality Control Board
Implementation Tracking Plan	Staff will develop a Implementation Tracking Plan	180 days after USEPA approval	Regional Water Quality Control Board

2. Phase II Implementation Actions

If water quality targets are not achieved upon conclusion of Phase I on December 31, 2007, Phase II actions will begin and the time schedule for implementation will be revised. The phased approach allows for immediate control of major sources while allowing time for monitoring to provide an analytical basis for Phase II planning. Phase II requires Regional Board staff to:

a. Bacterial Source Contribution
Regional Board staff will conduct further assessment of bacterial contributions from sources not addressed in Phase I.

b. Source Control Implementation Plan
Regional Board staff will develop implementation actions to control these sources by 2008.

c. Wastewater Treatment Plan
If the pathogen problem persists, plans for a wastewater treatment plant in the community of Palo Verde may be introduced by the stakeholders as a method for managing pathogens in Palo Verde Outfall Drain.

d. Site Specific Objective/ Use Attainability Analysis
A revision of Water Quality Objectives for Palo Verde Outfall Drain and Lagoon, such as a Site Specific Objective or Use Attainability Analysis will be considered for addressing natural background sources of bacterial by December 31, 2008.

Table E-3 Phase II Actions

PRACTICE	ACTION	SCHEDULE	IMPLEMENTING PARTIES
Bacterial source Contribution	Assessment of bacterial contributions from sources not addressed in Phase I	2004-Ongoing	Regional Water Quality Control Board
Source Control Implementation Plan	Development of implementation actions to control the sources identified in assessment of bacterial contributions above.	2008	Regional Water Quality Control Board
Wastewater Treatment Plan	Development of a plan for a wastewater treatment plant in the community of Palo Verde	2010	Palo Verde Stakeholders
Designation Revision	Regional Board consideration of a UAA and/or Site Specific Objective for addressing natural background sources of bacteria.	2008	Regional Water Quality Control Board

3. Conditional Prohibition

A conditional prohibition of discharge of bacterial indicator organisms is hereby established for Palo Verde Outfall Drain and its tributaries in Palo Verde Valley. Specifically, beginning three months after OAL approval of the Palo Verde Bacterial Indicators TMDL, the direct or indirect discharge of bacterial indicator organisms to the Palo Verde Outfall Drain and its tributaries is prohibited, unless the Discharger is:

a. In compliance with applicable TMDL(s), including implementation provisions; or
b. Has a monitoring and surveillance program approved by the Executive Officer that demonstrates that discharges of bacterial indicator organisms into the aforementioned waters do not violate or contribute to a violation of the TMDL(s), the anti-degradation policy (State Board Resolution No. 68-16) or water quality objectives;
c. Is Covered by Waste Discharge Requirements (WDRs) or a Waiver of WDRs that applies to the discharge; or
d. Demonstrates compliance with county sewage disposal ordinances.

Individual Dischargers must file a Report of Waste Discharge for general or individual Waste Discharge Requirements. Compliance with the conditional prohibition will be determined with respect to each individual Discharger. The intent of this conditional prohibition is to control, to

the degree practicable, bacterial indicator organism discharges in irrigated agriculture runoff water, from publicly owned treatment facilities, or from privately owned treatment systems in amounts that violate or contribute to a violation of state water quality standards.

The Regional Board will not enforce this prohibition until it completes one of the following actions:

- adopts a new waiver policy consistent with State Board septic system regulations;
- enters into MOUs with the counties for enforcement of septic system requirements;
- adopts general waste discharge requirements;
- determines to do none of the above.

4. Time Schedule

Regional Board staff estimate a timeframe of 10 years to achieve control of pathogen loading in Palo Verde Outfall Drain. The limiting factor on this timeframe is upgrading septic systems in the community of Palo Verde or the subsequent installation of a waste water treatment plant. All other actions (public outreach and education, implementing best management practices) should be in place within ten years. See table below.

Additionally, a revision of Water Quality Objectives for Palo Verde Outfall Drain and Lagoon, such as a Use Attainability Analysis (UAA) and/or a Site Specific Objective (SSO), will be considered for addressing natural background sources of bacteria by December 31, 2008.

Compliance is achieved initially by demonstrating through reporting mechanisms that implementation measures have been undertaken, and by consequently meeting numeric targets as illustrated through water quality monitoring.

At end of:	IMPLEMENTATION MILESTONE	Monitoring Activity
2004	• Initiate Phase I • RWQCB coordinates with the communities of Palo Verde and Ripley and the counties on public outreach and education topics • RWQCB coordinates with counties on monitoring of septic system maintenance in accordance with AB 885 • Consider revising Water Quality Objectives • Evaluate data collected over the year	fecal coliform E. coli, enterococci, fecal streptococci
2005	• Evaluate data collected over the year • Evaluate progress on implementation actions	
2006	• Evaluate data collected over the year • Evaluate progress on implementation actions	
2007	• Evaluate data collected over the year • Evaluate progress on implementation actions • RWQCB, in coordination with the counties, evaluates the quality of septic systems in the community of Palo Verde • Initiate Phase II, adjust implementation time schedule • RWQCB discusses with stakeholders (community members, BECC, etc.) the option of installing a sewer system and WWTP in Palo Verde	
2008	• Evaluate data collected over the year • Evaluate progress on implementation actions • Revision to Water Quality Objectives must be completed	
2009	• Evaluate data collected over the year • Evaluate progress on implementation actions	
2010	• Evaluate data collected over the year • Evaluate progress on implementation actions	
2011	• Evaluate data collected over the year • Evaluate progress on implementation actions	
2012	• Evaluate data collected over the year • Evaluate progress on implementation actions • RWQCB and stakeholders meet to evaluate TMDL compliance and further actions to be taken	
2013	Load Reductions and Numeric Targets achieved	

5. REGIONAL BOARD MONITORING FOR PALO VERDE BACTERIAL INDICATORS TMDL

Trend monitoring will document progress toward achieving the desired water quality conditions. It is important to track TMDL implementation, monitor water quality progress, and modify TMDLs and implementation plans as necessary to:

- Assess bacterial contributions from sources not addressed in Phase I;
- Address uncertainty that may exist in aspects of TMDL development;
- Track actions of the TMDL Implementation Plan to ensure that implementation is being carried out; and
- Ensure that the TMDL remains effective, given changes that may occur in the watershed after TMDL development.

The Regional Board will implement two types of trend monitoring to the extent funding is available: (1) quarterly water quality monitoring, and (2) surveillance and implementation tracking. Both are discussed further in the section below.

a. Monitoring and Tracking

Quarterly grab samples from sampling stations will be collected and analyzed for the following parameters:

- Fecal coliform organisms
- *E. coli*
- Fecal streptococci
- Enterococci
- Physical parameters (i.e. temperature, pH, dissolved oxygen)

Yearly assessments will be made to the Regional Board by Regional Board staff (staff) of the progress of the actions set forth in the TMDL Implementation Plan. Staff will coordinate with public and private entities in order to ensure likely success of the TMDL Implementation Plan in accordance with the Implementation Compliance Schedule milestones. Staff will present yearly reports to the Regional Board that discuss:

  - Water quality improvements in terms of pathogen indicator organisms
  - If milestones are being met according to the Implementation Compliance Schedule
  - What changes, if any, need to be made to the Implementation Compliance Schedule and why

b. Data Management

Staff will compile Implementation Action Assessments and QA/QC validated monitoring data into an organized spreadsheet. The spreadsheet will be updated quarterly in order to maintain a current public record. The public record will be posted on the Region's website and stored in a Palo Verde Pathogen Implementation Monitoring File. Regional Board staff will evaluate the data to determine when numeric targets are attained.

c. Water Quality Monitoring and Assessment Palo Verde Outfall Drain

Monitoring activities are contingent upon adequate programmatic funding. Staff will conduct monitoring activities for Palo Verde Bacterial Indicators TMDL pursuant to a Regional Board Quality Assurance Project Plan for Palo Verde Outfall Drain (QAPP). The QAPP shall be developed by Regional Board staff and be ready for implementation within 30 days following USEPA approval of this TMDL. The Regional Board's Executive Officer shall approve the QAPP and monitoring plan after determining that the QAPP and monitoring plan satisfy the objectives and requirements of this Section. The objectives of the monitoring program shall include collection of water quality data for:

- Assessment of water quality standards attainment,
- Verification of pollution source allocations,
- Calibration or modification of selected models (if any),
- Evaluation of point and nonpoint source control implementation and, effectiveness
- Evaluation of in-stream water quality,
- Evaluation of temporal and spatial trends in water quality, and
- Modification of the TMDL as necessary.

The monitoring program shall include a sufficient number of sampling locations and sampling points per location along Palo Verde Outfall Drain. Samples collected quarterly from the above-mentioned surface waters shall be collected and analyzed for the parameters listed above. Staff will track activities implemented by dischargers and responsible parties and surveillance conducted for Palo Verde Bacterial Indicators TMDL pursuant to an implementation tracking plan (ITP). The ITP will be developed within 180 days following USEPA approval of the TMDL. The Regional Board's Executive Officer shall approve the ITP after determining that the ITP satisfies the objectives and requirements of this Section. The objectives of Regional Board Surveillance and implementation tracking are:

- Assess/track/account for practices already in place;
- Measure the attainment of Milestones;
- Determine compliance with NPDES permits, WLAs, and LAs; and
- Report progress toward implementation of NPS water quality control, in accordance with the SWRCB NPS Program Plan (PROSIP).